

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number
WO 2004/058080 A3

(51) International Patent Classification⁷: **A61B 17/115**

(21) International Application Number:
PCT/US2003/041068

(22) International Filing Date:
22 December 2003 (22.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/435,223 20 December 2002 (20.12.2002) US

(71) Applicant (for all designated States except US): **TYCO
HEALTHCARE GROUP, LP** [US/US]; 150 Glover Avenue,
Norwalk, CT 06856 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JANKOWSKI,**

Bruce [US/US]; 17 Woodlawn Terrace, Meriden, CT
06450 (US). **WITTMANN, Joseph** [DE/DE]; Avenstrasse
22D, 85521 Riemerling (DE).

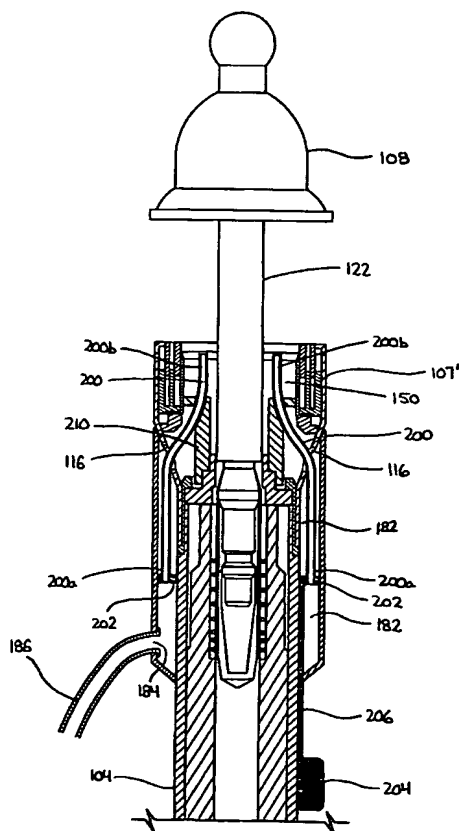
(74) Agent: **AUDET, Paul, R.**; United States Surgical, a Division
of Tyco Healthcare Group LLP, 150 Glover Avenue,
Norwalk, CT 06856 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: **VACUUM ASSISTED SURGICAL STAPLER**



(57) Abstract: A surgical stapling apparatus having a vacuum device associated therewith is disclosed. The vacuum device may be removable, fixedly secured thereto, or incorporated into the surgical stapling apparatus. The vacuum device may include a resilient band and vacuum tube secured to the shell assembly or body portion of the surgical stapling apparatus. Alternately, a vacuum chamber may be secured about the shell assembly and/or body portion of the stapling apparatus. In addition, one or more vacuum tubes may be positioned in the vacuum chamber. The vacuum tubes, preferably, extend into the shell assembly and are movable between nondeployed and deployed positions such that a distal end of each tube can be selectively positioned at multiple positions between the shell assembly and an anvil. The vacuum tubes can be formed of a shape-memory material such that the tubes point radially outwardly of the shell assembly when the tubes are in the deployed position.



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
10 September 2004

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/41068

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/115

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 839 639 A (SAUER) 24 November 1998 (1998-11-24) column 10, paragraph 5; figures 34,36 column 1, line 20; figures 8,16 -----	1
A	US 5 119 983 A (GREEN) 9 June 1992 (1992-06-09) figure 5 -----	1
A	US 6 241 140 B1 (ADAMS) 5 June 2001 (2001-06-05) column 13, paragraph 6 -----	1
A	US 6 083 241 A (LONGO) 4 July 2000 (2000-07-04) cited in the application -----	
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

2 April 2004

Date of mailing of the international search report

19 JUL 2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Barton, S

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/41068

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 915 616 A (VIOLA) 29 June 1999 (1999-06-29) cited in the application -----	
A	US 4 350 160 A (KOLESOV) 21 September 1982 (1982-09-21) -----	
P,A	WO 03/053255 A (TYCO) 3 July 2003 (2003-07-03) -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/41068

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-5

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5

Annular stapling apparatus with vacuum connection provided
by resilient band around staple shell

2. claims: 6-12

Annular stapling apparatus with vacuum connection provided by
housing surrounding staple shell

3. claims: 13-18

Annular stapling apparatus with vacuum connection provided
through anvil shaft

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 03/41068

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5839639	A	24-11-1998	NONE	
US 5119983	A	09-06-1992	CA 1322925 C2	12-10-1993
			AT 125680 T	15-08-1995
			AT 127328 T	15-09-1995
			AU 607495 B2	07-03-1991
			AU 1659488 A	01-12-1988
			AU 6984191 A	28-03-1991
			CA 1322923 C	12-10-1993
			DE 3854244 D1	07-09-1995
			DE 3854244 T2	25-01-1996
			DE 3854435 D1	12-10-1995
			DE 3854435 T2	14-03-1996
			DE 8714082 U1	18-02-1988
			EP 0293123 A2	30-11-1988
			EP 0449394 A2	02-10-1991
			ES 2074996 T3	01-10-1995
			ES 2077153 T3	16-11-1995
			JP 2538987 B2	02-10-1996
			JP 63300751 A	07-12-1988
			US 5392979 A	28-02-1995
			US 5285944 A	15-02-1994
			US 5158222 A	27-10-1992
US 6241140	B1	05-06-2001	US 6179195 B1	30-01-2001
			US 6126058 A	03-10-2000
			AU 3975702 A	21-05-2002
			EP 1328197 A2	23-07-2003
			JP 2004512892 T	30-04-2004
			WO 0238037 A2	16-05-2002
			US 2002063143 A1	30-05-2002
			US 2003019905 A1	30-01-2003
			US 2003132267 A1	17-07-2003
			US 2003127491 A1	10-07-2003
			US 2003192937 A1	16-10-2003
			US 2004049096 A1	11-03-2004
			US 6343731 B1	05-02-2002
			US 2002047036 A1	25-04-2002
			US 2002020732 A1	21-02-2002
			US 2003018236 A1	23-01-2003
			AU 761832 B2	12-06-2003
			AU 3998399 A	05-12-2000
			CA 2333690 A1	23-11-2000
			EP 1091695 A1	18-04-2001
			JP 2002543911 T	24-12-2002
			WO 0069344 A1	23-11-2000
US 6083241	A	04-07-2000	NONE	
US 5915616	A	29-06-1999	US 5443198 A	22-08-1995
			CA 2107848 A1	10-04-1994
			DE 69312417 D1	28-08-1997
			DE 69312417 T2	18-12-1997
			EP 0591999 A2	13-04-1994
			ES 2105036 T3	16-10-1997
			US 5474223 A	12-12-1995
			AU 660712 B2	06-07-1995
			AU 2536492 A	22-04-1993

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/41068

197/03 03/41000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 5915616	A	CA 2079716 A1	19-04-1993	
		DE 69223898 D1	12-02-1998	
		DE 69223898 T2	28-05-1998	
		EP 0537570 A2	21-04-1993	
		ES 2111027 T3	01-03-1998	
		JP 5200037 A	10-08-1993	
		US 5558266 A	24-09-1996	
		US 5579978 A	03-12-1996	
		US 5878937 A	09-03-1999	
		CA 2079756 A1	19-04-1993	
		DE 69217808 D1	10-04-1997	
		DE 69217808 T2	24-07-1997	
		DE 537571 T1	14-10-1993	
		EP 0537571 A2	21-04-1993	
		ES 2041610 T1	01-12-1993	
		US 5509596 A	23-04-1996	
		US 5706997 A	13-01-1998	

US 4350160	A	21-09-1982	SU 1088712 A1	30-04-1984
			CA 1142834 A1	15-03-1983
			CH 647941 A5	28-02-1985
			DE 3013814 A1	04-06-1981
			FR 2469173 A1	22-05-1981
			JP 1105677 C	30-07-1982
			JP 56050970 B	02-12-1981
			JP 56070759 A	12-06-1981
			SE 440446 B	05-08-1985
			SE 8002686 A	15-05-1981

WO 03053255	A	03-07-2003	WO 03053255 A1	03-07-2003
